BOOK REVIEW

A. FIECHTER: Advances in Biochemical Engineering Vol. 14. Springer Verlag, Berlin, Heidelberg, New York 1980. 162 pp., 39 figures, 20 tables

The newest volume of the known and important series of Advances in Biochemical Engineering contains five chapters.

1. J. C. Jallageas, A. Arnauld, P. Galzy: Bioconversions of Nitriles and Their Applications. The bioconversions of nitriles and primary amides have a practical interest for the productions of optically active α-hydroxy- or α-amino acids and for the preparation of highly pure amides and acids. The appropriate chemical hydrolyses are generally not suitable for such syntheses. The literature concerning the reactions of nitrile catabolism by living organisms is reviewed. Among these reactions (hydroxylation, reduction, hydrolysis, formation of aldehydes etc.), only hydrolyses are involved in industrial processes. A large number of economically important products may be obtained by hydrolysing nitriles or primary amides. Examples of technological application: production of DL-lactic acid, acrylamide and L-methionin. The descriptions and the possibilities of the improvement of the known processes are presented and discussed with 143 references.

2. Z. Řeháček: Ergot Alkaloid and Their Biosynthesis. This paper deals with chemistry, physiology of formation and physiological role of ergot alkaloids. This work reviews recent ergot alkalid (EA) literature (with 192 references) and illustrates the present problems of EA research. EAs are not waste, physiologically inert products of cell metabolism. The future of EA depends on the results of basic research, including the horizontal and vertical integration of various disciplines. The newer EA derivatives have opened up a new area of investigation.

3. R. V. Smith, P. J. Davis: Induction of Xenobiotic Monooxygenases. The P-450 electron transfer system is a relative young detection of the biochemists described first in liver cells. Only recently has decisive progress been made in microbial cells and in connection with research on utilization of alkane as the sole source of carbon for microbes. In Smith and Davis's article one may see that the proper understanding of this extramitochondrial electron transfer chain will help us in future to improve industrial alkane processes which are so important in some countries. In this paper the characteristics and induction of the P-450-type monooxygenases are reviewed. A discussion of the location, functional characteristics, substrate specificities and induction of mammalian liver cytochrome P-450 monooxygenases is provided. After a description of the nature of microbial monooxygenases, induction in these microorganisms is surveyed. Mammalian and microbial hydroxylations of the model hydrocarbon and biphenyl are reviewed. This paper has collected 201 references.

4. L. T. Fan, Y. A. Lee, D. H. Beardmore: Major Chemical and Physical Features of Cellulosic Materials as Substrates for Enzymatic Hydrolysis. The native crystalline cellulose is water insoluble, and its density and complexity make it very resistant to attack by cellulolytic enzymes. This review emphasizes the structure and morphology of cellulosic materials which are pertinent to understanding the enzymatic hydrolysis of these materials. Physical and chemical constraints on the susceptibility of cellulose to hydrolysis have been examined. In addition, the

relationship between the capillary structure of cellulose fiber and enzymatic hydrolysis is discussed. The article has reviewed the results of 53 publications.

5. R. E. Spier: Recent Developments in the Large Scale Cultivation of Animal Cells in Monolayers. In this chapter the history of monolayer cell culture is reviewed and the potential product applications for cells grown in this way are outlined. Recent developments in understanding the basic components of this system and the way in which cells interact with the surface on which they grow are considered. The general features of the different types of equipments which have the potential of producing such cells on industrial scale are reported on. A discussion of the particular equipment types follows and leads to the conclusions that no system has yet been perfected and that the best possibility for development resides in the glass sphere packed beds and/or microcarrier systems. The review contains 211 basic references.

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